Specification Amendment

Please amend the specification as follow :

[0006] As shown in Fig. 3, a conventional wire-bonding machine is used to attach a second solder block 130 to the upper surface of the first solder block 120. The second solder blocks 130 are made from a material such as lead-tin alloy. A ~~reflux~~reflow operation is carried out sprinkling a flux material over the wafer and heating the wafer. The heat softens the second solder blocks 130 and transforms the second solder blocks 130 into blobs of material having a hemispherical profile as shown in Fig. 4. This completes the fabrication of a bump 140 (only one is shown) comprising one first solder block 120 and one second solder block 130.

[0013] A first solder block bonds onto the wettable layer through a bonding operation. Each first solder block has an upper surface and a lower surface. The lower surface of the first solder block bonds with the wettable layer. The upper surface of the first solder block is planarized through polishing. Thereafter, a second solder block bonds onto the upper surface of the first solder block through another bonding operation. A ~~reflux~~reflow operation is next carried out.

[0015] In addition, after bonding a second solder block onto a first solder block, the upper surface of the second solder block may be planarized through polishing. The ~~reflux~~reflow

operation is carried out after the planarization. However, the process of planarizing the upper surface of the second solder block can also be omitted entirely.

[0027] As shown in Fig. 14, a second wire-bonding operation is conducted to form a plurality of second solder blocks 380 (only one is shown) on the upper surface 372 of various first solder blocks 370. A method similar to the one forming the first solder blocks 370 is used and hence detailed description is omitted. The second solder blocks 380 are made from a material such as 63Sn/37Pb lead-tin alloy, 90Pb/10Sn lead-tin alloy, 95Pb/5Sn lead-tine alloy, 97Pb/3Sn lead-tin alloy, 95Sn/5Ag tin-silver alloy, 97.5Sn/2Ag/0.5Cu tin-silver-copper alloy, 96.5Sn/3.5Ag tin-silver alloy or tin. A ~~reflux~~reflow operation is carried out sprinkling flux material over the wafer 310 and heating the wafer so that the first solder blocks 370 and the second solder blocks 380 melt together to form solder blocks 390 (only one is shown). Therefore, a set of bumps 392 (only one is shown) each comprising one solder block 390 and one under-ball metallic layer 342 having a structure shown in Fig. 15 is formed. Note that the ~~reflux~~reflow temperature must be higher than the alloying temperature between the first solder block 370 and the second solder block 380. Finally, the wafer 310 is sliced up into a plurality of chips 318 as show in Fig. 16.

[0029] The first solder blocks 370 and the second solder blocks 380 can be fabricated using a different material. For example, the first solder blocks 370 are all made from 63Sn/37Pb lead-tin alloy while the second solder blocks 380 are all made from 97Pb/3Sn lead-tin alloy.

Consequently, a lead-tin alloy having a specified lead/tin ratio such as 70Pb/20Sn may be produced after a ~~reflux~~ reflow operation. Therefore, lead-tin alloy of various ratios may be produced in this way. Moreover, the aforementioned processes can also be applied to the fabrication of lead free bumps. For example, silver is used to form the first solder blocks 370 while tin is used to form the second solder blocks 380. Thus, a tin-silver alloy having a specified tin/silver ratio such as 95Sn/5Ag may be produced after a reflux operation. Hence, tin-silver alloy of various ratios may be produced as well.

[0030] Furthermore, the upper surface 382 of the second solder blocks 380 may be polished to obtain a planar top. Through the polishing operation, volume of second solder block material on top of the first solder block 370 may also be modified. In fact, volume of material constituting the first solder blocks 370 and the second solder blocks 380 can be precisely controlled through separate polishing of the upper surface 372 of the first solder blocks 370 and the upper surface 382 of the second solder blocks 380 respectively. Thus, the metallic composition of the bumps 390 after the ~~reflux~~ reflow operation can be precisely controlled. In general, aside from the wire-bonding operations, volume of material in each first solder block 370 and second solder block 380 can be precisely controlled through polishing to produce bumps having a different compositional ratio.

[0034] In addition, the wafer may be sliced up before attaching the first solder blocks and the second solder blocks onto the active surface in a wire-bonding operation and performing a ~~reflux~~ reflow operation. Furthermore, the first solder blocks may bond with the under-ball metallic layer immediately after forming the under-ball metallic layer. Thereafter, the under-ball metallic layer is etched using the first solder blocks as an etching mask. With this arrangement, one photolithographic step is saved.